Statement of Basis

Permit to Construct No. P-2015.0058
Project ID 61634

Great Western Malting Co.
Pocatello, Idaho

Facility ID 005-00035

Proposed for Public Comment

April 15, 2016
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The purpose of this Statement of Basis is to satisfy the requirements of IDAPA 58.01.01.et seq, Rules for the Control of Air Pollution in Idaho, for issuing air permits.

ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC	acceptable ambient concentrations
AACC	acceptable ambient concentrations for carcinogens
acfm	actual cubic feet per minute
ASTM	American Society for Testing and Materials
BACT	Best Available Control Technology
BMP	best management practices
Btu	British thermal units
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CAS No.	Chemical Abstracts Service registry number
CBP	concrete batch plant
CEMS	continuous emission monitoring systems
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CI	compression ignition
CMS	continuous monitoring systems
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalent emissions
COMS	continuous opacity monitoring systems
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
FEC	Facility Emissions Cap
GHG	greenhouse gases
gph	gallons per hour
gpm	gallons per minute
gr	grains (1 lb = 7,000 grains)
HAP	hazardous air pollutants
HHV	higher heating value
HMA	hot mix asphalt
hp	horsepower
hr/yr	hours per consecutive 12 calendar month period
ICE	internal combustion engines
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
iwg	inches of water gauge
km	kilometers
lb/hr	pounds per hour
lb/qtr	pound per quarter
m	meters
MACT	Maximum Achievable Control Technology
mg/dscm	milligrams per dry standard cubic meter
MMBtu	million British thermal units
MMscf	million standard cubic feet
MMcf	million cubic feet
MT	metric ton (1,000 kg)
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide

NO_X	nitrogen oxides
NSPS	New Source Performance Standards
O&M	operation and maintenance
O_2	oxygen
PAH	polyaromatic hydrocarbons
PC	permit condition
PCB	polychlorinated biphenyl
PERF	Portable Equipment Relocation Form
PM	particulate matter
$PM_{2.5}$	particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
POM	polycyclic organic matter
ppm	parts per million
ppmw	parts per million by weight
PSD	Prevention of Significant Deterioration
psig	pounds per square inch gauge
PTC	permit to construct
PTC/T2	permit to construct and Tier II operating permit
PTE	potential to emit
PW	process weight rate
RAP	recycled asphalt pavement
RFO	reprocessed fuel oil
RICE	reciprocating internal combustion engines
Rules	*Rules for the Control of Air Pollution in Idaho*
scf	standard cubic feet
SCL	significant contribution limits
SIP	State Implementation Plan
SM	synthetic minor
SM80	synthetic minor facility with emissions greater than or equal to 80% of a major source threshold
SO_2	sulfur dioxide
SOB	statement of basis
SO_x	sulfur oxides
T/day	tons per calendar day
T/hr	tons per hour
T/yr	tons per consecutive 12 calendar month period
T2	Tier II operating permit
TAP	toxic air pollutants
TEQ	toxicity equivalent
T-RACT	Toxic Air Pollutant Reasonably Available Control Technology
ULSD	ultra-low sulfur diesel
U.S.C.	United States Code
VOC	volatile organic compounds
yd^3	cubic yards
$\mu g/m^3$	micrograms per cubic meter

Project Specific Acronyms

BA1	analysis bin for Malthouse B (Kiln 2)
BA2	analysis bin for Malthouse B (Kiln 2)
BH1	Baghouse 1
BH2	Baghouse 2
BH3	Baghouse 3
bhp	brake horsepower
BS1	Malt House Boilers 1&2

BS2	Pellet Mill Boiler
CS	Pellet Mill Cooler
EG1	Emergency Generator-diesel
GBE 1-6	Germination Beds Exhaust 1 to 6
GV1-GV4	Germination Vessels 1 to 4
GVB1	Germination Vessel Boiler 1
GVB2	Germination Vessel Boiler 2
GVB3	Germination Vessel Boiler 3
GVB4	Germination Vessel Boiler 4
GVB5	Germination Vessel Boiler 5
GVB6	Germination Vessel Boiler 6
GWM	Great Western Malting Company Pocatello facility
KB1	Malthouse B (Kiln 2) Burner 1
KB2	Malthouse B (Kiln 2) Burner 2
KB3	Malthouse B (Kiln 2) Burner 3
KB4	Malthouse B (Kiln 2) Burner 4
KBPC	kiln by-product cyclone
KSE01-05	Malthouse A Kilning- Kiln 1 stacks 1 to 5
KS1	Malthouse A (Kiln 1) Burner K1
KS2	Malthouse A (Kiln 1) Burners K2 -K5
KS3	Malthouse A (Kiln 1) Burner K6
KS4	Malthouse A (Kiln 1) Burners K7 - K9
KS5	Malthouse A (Kiln 1) Burner K10
K2	Malthouse B Kiln 2
KB#	Malthouse B (Kiln 2) burners 1 to 4
MAU1	Steep Building Makeup Air Unit 1
MAU2	Steep Building Makeup Air Unit 2
MBC	Micro Bin fill conveyor
MT	metric tons
MT/hr	metric tons per hour
NMC2	New Malt Conveyor 2
NML	the new malt leg conveyor
RB	Rail Bay for Loading/Unloading
STC1	Steep Tanks Fill Conveyor 1
STC2	Steep Tanks Fill Conveyor 2
TB	Truck Bay for loading/Unloading

FACILITY INFORMATION

Description

Great Western Malting Co. produces high quality malted barley and other malted grains that are basic ingredients in beer. The processes of the plant can be divided into four main areas:

- Grain Handling (grain receiving, storage, cleaning and conveying);
- Malting (steeping, germination and kilning);
- Malt Handling (storage, cleaning, conveying, and shipping), and
- By-product Handling (pellet making, storage, conveying and shipping).

Grain Handling

Most of the grain received at the plant is barley but the plant also processes wheat and could process rye, rice or other grains, only in much smaller amounts. In the flow diagrams and process descriptions, whenever barley is mentioned, the description also applies to other grains.

Grain is received by truck or railcar and unloading operations occur at the truck bay (TB) and rail bay (RB). During unloading, the trucks or railcars discharge grain into hoppers, from which the grain is conveyed through the headhouse. Unloading operations result in the generation of particulate matter (PM) emissions. The truck bay receiving pit is equipped with side draw vacuums with exhaust to Baghouse 1 (BH1). Hopper-type trucks account for a majority of the truck receiving operations. These trucks and railcar unloading operations employ choke feed to the receiving pit to minimize fugitive particulate emissions.

The grain is transferred through the headhouse to the grain storage silos. PM emissions generated by headhouse transfer operations are controlled by BH1. The grain is cleaned and graded. The grain transfers and the cleaning device emissions are controlled by baghouse 2 (BH2.) "Thin" grain is transferred to Feed Barley transfer bins, and the material is trucked offsite for use as animal feed. Feed Barley transfer operations are controlled by BH1. Feed Barley truck loadout operations are controlled by a cyclone side vacuum draw system that exhausts to baghouse (BH3). Materials collected by all of the centralized baghouse systems (BH1, BH2 and BH3) are sent to the pellet mill.

Malting

Existing Malting Process

After cleaning, the grain is transferred to the malting operations. Currently there is one malting process at the plant that takes place in the Malthouse. The existing Malthouse contains steeping tanks and six germination beds. The grain is conveyed to steep tanks where it is steeped by placing it in large tanks with cool water. Following steeping, the grain is dropped into one of six temperature and humidity controlled germination beds and allowed to grow.

The steeping and germination processes are served by chilled water systems. The germination beds are periodically sanitized with hypochlorite resulting in minor emissions of chlorine through the Germination Bed Exhaust emission points (GBE 1-6). The sanitizing is performed on one germination bed on any given day with emissions lasting for a period of about 2 hours. The germination process requires heated air provided by the two existing natural gas-fired hot water boilers (Malthouse Boilers 1 & 2) that exhaust to a common stack (BS1).

Following germination, "green" malt or original grain is dried in an indirect natural gas-fired malt kiln (Malthouse A). The malt kiln has two levels. Green malt enters the upper deck and is dried. The green malt is then transferred to the lower deck of the kiln where it is further dried to about 4% moisture content. During a portion of the kilning, sulfur may be burned in a sulfur stove and exhausted into the kiln, primarily as sulfur dioxide. Sulfur is only burned if customer product specifications require its use. The kiln emits PM, volatile organic compounds (VOC) and sulfur dioxide (SO_2) that are vented through five stacks (KSE01-05).

Currently, heat for the kiln is provided by ten natural gas-fired Malthouse A (Kiln 1) burners that exhaust through 5 Malthouse A burner stacks. The burners for the existing kiln will be replaced with ten air-to-air heat exchangers to provide drying air to the kiln. The new heat exchangers will have ten natural gas-fired low NOx burners, one for each heat exchanger. Each burner will have a 7.9 MMBtu/hr heat input capacity. The exhausts from the new heat exchanger burners will discharge through the 5 malt kiln burner stacks (KS1-KS5).

New Malting Process

The project will add a new malting process line to the plant. The new malting equipment will include 16 new steep tanks, 4 new germination vessels, and 1 new kiln (Malthouse B).

There will be two new conveyor transfer points as grain is conveyed to the new steep tanks. Steep tank fill conveyor 1 (STC1) and steep tank fill conveyor 2 (STC2) will each have a new dust filter to capture particulate matter from the grain transfers into the new steeps. The steep tanks will be located in a Steep House in an upper group of eight tanks and a lower group of eight tanks. Each steep tank will have its own stack for exhausting carbon dioxide (CO_2) emissions.

Heat for the Steep House building will be provided by two natural gas-fired makeup air heaters (MAU1- MAU2). Each heater will have a 2.188 MM Btu/hr heat input capacity.

Four new germination vessels (GV1- GV4) will be constructed. Each vessel will be an independent structure. There will be two stacks for each GV for a total of eight stacks. Just like in the existing germination equipment, the new germination vessels will be sanitized using hypochlorite, which may produce minor amounts of chlorine emissions. Only one germination vessel will be sanitized on any given day with emissions lasting up to 2 hours per cleaning event.

The hot water for germination will be provided by six new natural gas-fired boilers. Each boiler will have a 2 MMBtu/hr heat input capacity. Three boilers (GVB1-GVB3) will serve GV1 and GV2 but only two boilers will operate at any one time and one will serve as a backup. Similarly, three boilers (GVB4-GVB6) will serve GV3 and GV4 with only two boilers operating at any one time.

A new malt kiln (Malthouse B, Kiln 2) will be constructed in a new separate building at the plant. The new kiln will use four air-to-air heat exchangers to provide the drying air for the kiln. The heat exchangers will have a total of four natural gas-fired burners (KB1- KB4), one for each heat exchanger. Each burner will have an 18.15 MMBtu/hr heat input capacity and its own exhaust stack. The sulfur will not be burned in the new kiln. Air from Malthouse B will be discharged from a single stack.

Biogenic CO_2 is given off during the malting process and is generated from combustion equipment. This pollutant will need to be added to the permit for the existing and new equipment.

<u>Malt Handling</u>

After the malt is dried in the kiln, it is conveyed and placed into bins for analysis, then it is cleaned and transferred to malt storage silos until it is shipped.

Two new 375 metric ton (MT) malt analysis bins (BA1 and BA2) will be added to handle the malt from the new kiln (Malthouse B). The malt analysis bins will have fill conveyors and dust filters for capturing particulate matter when filling the bins. These bins are used as temporary storage while the malt is being analyzed for product quality.

There will be two new malt conveyer transfer points when moving the malt from the new kiln to the existing malt handling conveyors. One transfer point is called the new malt leg conveyor (NML) and the other is called New Malt Conveyor 2 (NMC2). Each conveyor transfer point will have a dust filter to control particulate emissions.

After analysis, the malt is cleaned before it is placed into storage. A new drum scalper and aspirator will be replacing some of the existing malt cleaning equipment at the plant. Particulate matter generated during cleaning is collected in existing BH2. Grain transfer emissions are collected in existing BH3. The existing baghouses have enough capacity to control the additional throughputs.

The increase in malt production will require the addition of storage to the existing plant. The plan is to add 10 new 750 MT malt storage bins. There will be two new fill conveyors, one for each group of five malt storage bins.

The dust from the malt storage bins during filling will be captured in the enclosed conveyor and vented through a new dust filter, one filter for each conveyor .

Before shipping, the malt is transferred from the storage bins into smaller loadout bins. The project will add four new 40 MT Micro Bins (loadout bins). The Micro Bin fill conveyor (MBC) will have a dust filter for controlling dust during bin filling. The Micro Bins will be used to store specific qualities and mixes of malts for micro-brew customer orders.

The malt is shipped by railcar and truck. The malt is gravity fed into trucks in the existing Truck Bay or railcars in the existing Rail Bay. There will be an increase in the number of trucks and railcars after the project starts operation as a result of the increase in production.

By-Product Handling

By-products are produced from the kilning process. By-products from the new kiln will be pneumatically conveyed to a new cyclone that feeds into an existing by-product storage bin. A dust filter will be used to control emissions from the kiln by-product cyclone (KBPC) exhaust.

By-products from the kilns and material collected by the baghouses are sent to an existing pellet mill system where the material is pelletized and shipped offsite. The pellet mill mixer requires steam provided by an existing steam boiler (pellet mill boiler) that exhausts through its own boiler stack (BS2). After pellets are formed, they are cooled using the existing pellet mill cooler cyclone and stored in a pellet bin. The cooler cyclone exhausts directly to atmosphere through its own stack (CS). The loadout of pelletized material into trucks results in fugitive emissions. The existing pellet mill system has enough capacity to handle the grain residues, malt by-products and baghouse material from the expansion so no changes are planned to the pellet mill system or pellet mill boiler.

Permitting History

The following information was derived from a review of the permit files available to DEQ. Permit status is noted as active and in effect (A) or superseded (S).

October 4, 2006	P-060312, converting the existing Tier II operating permit to a PTC rather than renewing the Tier II permit and increasing the permitted pellet production rate from 2.4 tons per hour to 5.0 tons per hour, Permit status (A, but will become S upon issuance of this permit)
January 26, 2001	T2-990007, issued a Tier II operating permit for the pellet mill operation. Permit status (S)
June 29, 1981	Amendment to the January 25, 1980 PTC, issued June 29, 1981, Permit status (S)
January 25, 1980	Permit to Construct to a barley storage, cleaning, handling and malting operation with air pollution control baghouses controlling particulate emissions, Permit status (S)

Application Scope

This PTC is for a minor modification at an existing minor facility. The malting expansion project will result in an increase in grain throughput and malt production.

The proposed project will

- Add a second malting line (i.e., two new conveyors, two new makeup air heaters, 16 new steep tanks, four new germination vessels, six new natural-gas fired boilers to supply hot water, one new kiln with four burners)
- Add new malting line handling equipment (i.e., two new malt analysis bins with two filling conveyors, and two transfer conveyors moving malt from the new kiln to the existing malt handling conveyors.)
- Replace some of the existing malt cleaning equipment with a new drum scalper and two aspirators, but still use the existing baghouse 2 and baghouse 3.

- Increase malt storage capacity (i.e., 10 new storage bins with two conveyors, one conveyor for each group of five malt storage bins.)
- Add loadout bins (i.e., four new loadout bins with a Micro Bin fill conveyor)
- Add a new kiln byproduct cyclone with a dust filter to transfer new kiln byproduct to the existing byproduct bin.
- Replace the heaters in the existing malt kiln (Malthouse A) with 10 air-to-air heat exchanges supported by 10 low NOx burners.

The expected maximum production rates are:

Material	Existing	Facility Final Total
	T/yr (from 2006 PTC)	T/yr (to-be-permitted)
Barley & other grains	171,000	356,400
Malt	130,000	321,200
Pelletized/Feed	12,400	29,700

The project will be constructed in two phases. Phase 1 includes the construction and testing of the new malting and material handling equipment in the malting expansion. Phase 2 covers the replacement of the heaters in the existing kiln with new air-to-air heat exchangers.

Phase 1: Malting Expansion

- Foundations and Utilities: December 2015 to May 2016
- Equipment Installations: April 2016 to February 2017
- Start-up Trials: January 2017 to May 2017
- Begin Production: May 2017

Phase 2: Heater Replacement

- Stop Production in Existing Kiln: May 2017
- Heater Installations: May to June 2017
- Begin Production in Existing Kiln: July 2017

Application Chronology

December 7, 2015	DEQ received an application.
December 8, 2015	DEQ received an application fee.
January 5 – January 20, 2016	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action.
December 21, 2015	DEQ approved pre-permit construction.
December 17, 18, and 28, 2015 and April 10, 2016	DEQ received supplemental information from the applicant.
January 5, 2016	DEQ determined that the application was complete.
March 14, 2016	DEQ made available the draft permit and statement of basis for peer and regional office review.
Marche 15, 2016	DEQ made available the draft permit and statement of basis for applicant review.
March 16, 2016	DEQ received the PTC processing fee.

April ?? – May ??, 2016 DEQ provided a public comment period on the proposed action.

TECHNICAL ANALYSIS

Emissions Units and Control Equipment

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION

Source ID No.	Sources	Control Equipment	Emission Point ID No. Refer to Modeling Memo for Stack Parameters
BARLEY UNLOADING, BARLEY AND MALT HANDLING AND LOADOUT			
BH1	Truck Barley Unload – Stack Barley Headhouse Transfers – 80% to BH1 Feed Barley Transfer to Bins Pellet Mill Transfers Pellet Mill Cleaning Malt Transfers – 20 % to BH1	Baghouse 1 (BH1) Manufacturer: Carter-Day Model: 232RF10 Pressure Drop: 2.5 inch of water Air/Cloth Ration: 10.1	Stack BH1
BH2	Barely Headhouse Transfers – 20% to BH2 Barley Transfers Before Cleaning Barley Cleaning Barley Transfers After Cleaning Malt Cleaning – 67% to BH2	Baghouse 2 (BH2) Manufacturer: Carter-Day Model: 376RF10 Pressure Drop: 2.5 inch of water Air/Cloth Ratio: 9.4	Stack BH2
BH3	Feed Barley Loading for Shipment – Stack (95% captured in stack) Malt Transfers – 80% to BH3 Malt Clearing – 33% to BH3	Baghouse 3 (BH3) Manufacturer: Carter-Day Model: 376RF10 Pressure Drop: 2.5 inch of water Air/Cloth Ratio: 9.4	Stack BH3
PELLET MILL OPERATIONS			
CS	Pellet Mill Cooler Manufacture/Model: Unknown Installed: 1987	Cyclone Dust Separator	Pellet mill cooler cyclone stack (Stack CS)
BS2	Pellet Mill Boiler Manufacturer: Cleaver-Brooks Model: CB 200-700 Installed: 1987 Rated Heater Capacity: 2.51 MMBtu/hr Burner Type: horizontally fired Fuel: natural gas	None	Boiler Stack No.2 (Stack BS2)
MALT HOUSE BOILERS			
BS1	Malt House Boiler 1 Manufacturer: Cleaver-Brooks Model: CB 200-700 Installed: 1980 Rated Heat Capacity: 25.1 MMBtu/hr Burner Type: horizontally fired Max. Hourly Combustion Rate: 0.025 MMsct/hr Normal Annual Combustion Rate: 21.036 MMscf/yr Fuels: natural gas Permit Limit: 0.00625 MMscf/hr, and only one malt house boiler shall operate at a time	None	Stack BS1 (one common stack)

Source ID No.	Sources	Control Equipment	Emission Point ID No. Refer to Modeling Memo for Stack Parameters
	Malt House Boiler 2 Manufacturer: Cleaver-Brooks Model: CB 200-700 Installed: 1980 Rated Heat Capacity: 25.1 MMBtu/hr Burner Type: horizontally fired Max. Hourly Combustion Rate: 0.025 MMscf/hr Normal Annual Combustion Rate: 21.036 MMscf/yr Fuel: natural gas Permit limit: 0.00625 MMscf/hr, and only one malt house boiler shall operate at a time	None	
MALT DRYING KILN			
GBE1-6	Germination Beds - 6 beds Manufacturer: Saladin Malting Equipment Model: custom Maximum Capacity: 130,000 MT/yr Date of Construction: 1980 Operation: 24 hr/day, 8760 hr/yr	None	Germination Bed Exhaust w/ Three Exhaust Points (GBE 1&4, GBE 2&5, GBE 3&6)
KSE01 – KSE05	Malthouse A (Kiln 1) Manufacturer: Saladin Malting Equipment Model: custom Maximum Capacity: 130,000 MT/yr Date of Construction: 1980 Operation: 16.74 MT/hr daily rolling average, 130,000 MT/yr	None	KSE01 KSE02 KSE03 KSE04 KSE05
MALT EXPANSION PROJECT			
KS1 - KS5	10 Air-To-Air Heaters (one burner per heater, replacing air heaters in existing Malthouse A, low NOx burners, K1-10) Manufacturer: Maxon Burners (Air Froehlich Air Heaters) Model: KINEDIZER LE- 6" Maximum Capacity: 7.9 MMBtu/hr heat input each Fuel Type: natural gas Date of Construction: 2017, modification to existing sources Operation: 24 hr/day, 8760 hr/yr 290 MMscf natural gas/yr total for all 10 burners to limit PTE	None	Stack KS1 for K1 Stack KS2 for K2-5 Stack KS3 for K6 Stack KS4 for K7-K9 Stack KS5 for K10
STC1F	Steep Tanks Conveyor 1 (fill, STC1) Manufacturer: CUSTOM Model: N/A Maximum Capacity: 160 MT/hr Date of Construction: 2016 Operation: 24 hr/day, 8760 hr/yr	Steep Tank Conveyor 1 Filter (STC1F) Date of Installation: 2016 Manufacturer: Donaldson Torit Model Number: CPV1 PM/PM_{10} Control Efficiency: 99.5%	STC1F (S1)
STC2F	Steep Tanks Conveyor 2 (fill, STC2) Manufacturer: CUSTOM Model: N/A Maximum Capacity: 160 MT/hr Date of Construction: 2016 Operation: 24 hr/day, 8760 hr/yr	Steep Tank Conveyor 1 Filter (STC2F) Date of Installation: 2016 Manufacturer: Donaldson Torit Model Number: CPV1 PM/PM_{10} Control Efficiency: 99.5%	STC2F (S2)
STA1-STA8	Steep Tanks- 8 Tanks- Upper Level (STA1- STA8) Manufacturer: CUSTOM Model: N/A Maximum Capacity: 50 MT, each Date of Construction: 2016 Operation: 24 hr/day, 8760 hr/yr	None	STA1- STA8 (S3-S10)

Source ID No.	Sources	Control Equipment	Emission Point ID No. Refer to Modeling Memo for Stack Parameters
STB1- STB8	Steep Tanks- 8 Tanks- Lower Level (STB1- STB8) Manufacturer: CUSTOM Model: N/A Maximum Capacity: 50 MT, each Date of Construction: 2016 Operation: 24 hr/day, 8760 hr/yr	None	STB1- STB8 (S11-S18)
GV1- GV4	Germination Vessels- 4 Vessels (GV1- GV4) Manufacturer: CUSTOM Model: N/A Maximum Capacity: 400 MT, each Date of Construction: 2016 Operation: 24 hr/day, 8760 hr/yr	None	GV1- GV4 (S19 & 20 for GV1 S21 & 22 for GV2 S23 & 24 for GV3 S25 & S26 for GV4)
KB1- KB4	Four Kiln Burners for Malthouse B (Kiln 2) (one burner per air-to-air heater, KB1- KB4, low NOx burner) Manufacturer: Maxon Burners (Air Froehlich Air Heaters) Model: Kinedizer LE- 10" Maximum Capacity: 18.15 MMBtu/hr heat input, each Fuel Type: natural gas Date of Construction: 2016 Operation: 24 hr/day, 8760 hr/yr 420 MMscf natural gas /yr total for all 4 burners to limit PTE	None	KB1- KB4 (S27, S28, S29, S30)
K2	Malthouse B (Kiln 2) Manufacturer: CUSTOM Model: N/A Maximum Capacity: 400 MT Date of Construction: 2016 Operation: 24 hr/day, 8760 hr/yr 21.1 MT/hr daily rolling average; 162,000 MT/yr	None	K2 (S31)
NMLF	New Malt Leg Conveyor Manufacturer: CUSTOM Model: N/A Maximum Capacity: 219 MT Date of Construction: 2016 Operation: 24 hr/day, 8760 hr/yr	New Malt Leg Filter Date of Installation: 2016 Manufacturer: Donaldson Torit Model Number: CPV3 PM/PM_{10} Control Efficiency: 99.5 or PM_{10} Emissions Concentration: 0.002 gr/dscf	NMLF (S32)
BA1F	Analysis Bin 1 Fill (BA1) Manufacturer: CUSTOM Model: N/A Maximum Capacity: 375 MT (??) Date of Construction: 2016 Operation: 24 hr/day, 8760 hr/yr	Analysis Bin 1 Filter (BA1F) Date of Installation: 2016 Manufacturer: Donaldson Torit Model number: CPV1 PM/PM_{10} control efficiency: 99.5% or PM_{10} Emissions Concentration: 0.002 gr/dscf	BA1F (S33)
BA2F	Analysis Bin 2 Fill Manufacturer: CUSTOM Model: N/A Maximum Capacity: 375 MT Date of Construction: 2016 Operation: 24 hr/day, 8760 hr/yr	Analysis Bin 2 Filter Date of Installation: 2016 Manufacturer: Donaldson Torit Model Number: CPV1 PM/PM_{10} Control Efficiency: 99.5% or PM_{10} Emissions Concentration: 0.002 gr/dscf	BA2F (S34)

Source ID No.	Sources	Control Equipment	Emission Point ID No. Refer to Modeling Memo for Stack Parameters
KBPCF	Kiln Byproduct Cyclone Manufacturer: Donaldson Cyclone Model: HV-14 Maximum Capacity: 5 MT/hr Date of Construction: 2016 Operation: 24 hr/day, 8760 hr/yr	Kiln By-Product Cyclone Filter Date of Installation: 2016 Manufacturer: Donaldson Torit Model Number: CPV1 PM/PM_{10} Control Efficiency: 99.5% or PM_{10} Emissions Concentration: 0.002 gr/dscf	KBPCF (S35)
NMC3F	New Malt Conveyor 2 Manufacturer: CUSTOM Model: N/A Maximum Capacity: 160 MT Date of Construction: 2016 Operation: 24 hr/day, 8760 hr/yr	New Malt Conveyor 2 Filter Date of Installation: 2016 Manufacturer: Donaldson Torit Model Number: CPV1 PM/PM_{10} Control Efficiency: 99.5% or PM_{10} Emissions Concentration: 0.002 gr/dscf	NMC3F (S36)
MBCF	Micro Bins 1-4 Fill Conveyor Manufacturer: CUSTOM Model: N/A Maximum Capacity: 46 MT, each bin Date of Construction: 2016 Operation: 24 hr/day, 8760 hr/yr	Micro Bins Conveyor Filter Date of Installation: 2016 Manufacturer: Donaldson Torit Model Number: CPV1 PM/PM_{10} Control Efficiency: 99.5% or PM_{10} Emissions Concentration: 0.002 gr/dscf	MBCF (S37)
NMSBC1F	New Malt Storage Bins 1-5 Fill Conveyor 1 Manufacturer: CUSTOM Model: N/A Maximum Capacity: 750 MT, each bin Date of Construction: 2016 Operation: 24 hr/day, 8760 hr/yr	New Malt Storage Bin Conveyor 1 Filter Date of Installation: 2016 Manufacturer: Donaldson Torit Model Number: CPV1 PM/PM_{10} Control Efficiency: 99.5% or PM_{10} Emissions Concentration: 0.002 gr/dscf	NMSBC1F (S46)
NMSBC2F	New Malt Storage Bins 6-10 Fill Conveyor 2 Manufacturer: CUSTOM Model: N/A Maximum Capacity: 750 MT, each bin Date of Construction: 2016 Operation: 24 hr/day, 8760 hr/yr	New Malt Storage Bin Conveyor 2 Filter Date of Installation: 2016 Manufacturer: Donaldson Torit Model Number: CPV1 PM/PM_{10} Control Efficiency: 99.5% or PM_{10} Emissions Concentration: 0.002 gr/dscf	NMSBC2F (S47)
GVB1, GVB2, GVB3	Germination Vessel Boilers 1, 2 and 3 The following applies to each boiler: Manufacturer: Cleaver Brooks Model: CFW-700-1500-125HW Maximum Capacity: 2.0 MMBtu/hr heat input Fuel Type: natural gas Date of Construction: 2016 Full Load Consumption Rate: 1950 cf/hr Operation: 24 hr/day, 8760 hr/yr Germination Vessel Boilers 1, 2 and 3 serve two germination vessels (GV1 & GV2), but only two boilers will operate at a time with one boiler as backup.	None	GVB1, GVB2, GVB3 (S38, S39,S40)

Source ID No.	Sources	Control Equipment	Emission Point ID No. Refer to Modeling Memo for Stack Parameters
GVB4, GVB5, GVB6	Germination Vessel Boilers 4, 5 and 6 The following applies to each boiler: Manufacturer: Cleaver Brooks Model: CFW-700-1500-125HW Maximum Capacity: 2.0 MMBtu/hr heat input Fuel Type: natural gas Date of Construction: 2016 Full Load Consumption Rate: 1950 cf/hr Operation: 24 hr/day, 8760 hr/yr Germination Vessel Boilers 4, 5 and 6 serve two germination vessels (GV4 & GV5), but only two boilers will operate at a time with one boiler as backup.	None	GVB4, GVB5, GVB6 (S41, S42, S43)
MAU1 MAU2	Steep Building Make-Up Air Units 1 and 2 Manufacturer: REZNOR Model: PCDH-175 Maximum Capacity: 2.1888 MMBtu/hr heat input each Fuel Type: natural gas Date of Construction: 2016 Operation: 24 hr/day, 8760 hr/yr	None	MAU1, MAU2 (S44, S45)
BH2, BH3	Malt Cleaning- Drum Scalper & Two Aspirators (MC) Manufacturer: CIMBRIA drum scalper and KICE aspirator Model: N/A Maximum Capacity: 150 MT/hr Date of Construction: 2016, modification to an existing source Operation: 24 hr/day, 8760 hr/yr	Baghouse 2 (BH2) & Baghouse 3 (BH3) Date of Installation: 1980 Manufacturer: Carter-Day Model: 376RF10 Pressure Drop: 2.5 inch of water Air/Cloth Ratio: 9.4	BH2, BH3
EG1	Emergency Generator (EG1) Manufacturer: Kohler Model: 45ROZ71 Maximum Rated Horsepower: 60 bhp/45 kW Fuel Type: distillate fuel oil with max. sulfur content of 15 ppm (0.0015% by weight) Model Year: 1980 Date of Construction: 1980 IC Engine Cylinder Displacement: 56 liters per cylinder Operating schedule: 1 hr/day, 100 hr/yr	None	EG

Emissions Inventories (EI)

Potential to Emit

IDAPA 58.01.01 defines Potential to Emit as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is state or federally enforceable. Secondary emissions do not count in determining the potential to emit of a facility or stationary source.

Using this definition of Potential to Emit, an emission inventory was developed by the applicant and reviewed by DEQ staff. Refer to Appendix A for detailed calculations and assumptions.

Uncontrolled Potential to Emit

Using the definition of Potential to Emit, uncontrolled Potential to Emit is then defined as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall **not** be treated as part of its design **since** the limitation or the effect it would have on emissions **is not** state or federally enforceable.

The uncontrolled Potential to Emit is used to determine if a facility is a "Synthetic Minor" source of emissions. Synthetic Minor sources are facilities that have an uncontrolled Potential to Emit for regulated air pollutants or HAP above the applicable Major Source threshold without permit limits.

According to the information in the statement of basis (SOB) for PTC No. P-060312 issued on 10/4/20006, the facility classification is SM for NOx, CO, PM/PM_{10}. This permit modification does not change the facility's classification based on the post project PTE submitted by the applicant and reviewed by DEQ staff. However, for CO, it will be SM80 as its post project PTE is greater than 80 T/yr.

Pre-Project Potential to Emit

Pre-project Potential to Emit is used to establish the change in emissions at a facility as a result of this project.

The following table presents the pre-project potential to emit for all criteria from all emissions units at the facility. It is taken from the SOB for PTC No. P-060312 issued on 10/4/20006. Refer to that SOB for more details.

Table 2 PRE-PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS [b]

Source	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	VOC	CO_2e
	T/yr[a]	T/yr[a]	T/yr[a]	T/yr[a]	T/yr[a]	T/yr[a]	T/yr[a]
Pre-Project Totals	**5.6 (8.5) [b]**	**5.6 (5.2)**	**21.5 (20.53)**	**18.3 (14.55)**	**15.6 (17.33)**	**10.4 (9.40)**	**ND (31,320)**

a) Controlled average emission rate in tons per year is an annual average, based on the permitted annual operating schedule and annual limits.
b) The values in the parentheses are taken from the application for this project.

Post Project Potential to Emit

Post project Potential to Emit is used to establish the change in emissions at a facility and to determine the facility's classification as a result of this project. Post project Potential to Emit includes all permit limits resulting from this project.

The following table presents the post project Potential to Emit for criteria and GHG pollutants from all emissions units at the facility as submitted by the applicant and reviewed by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 3 POST PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	VOC	CO_2e
	T/yr[a]	T/yr[a]	T/yr[a]	T/yr[a]	T/yr[a]	T/yr[a]	T/yr[a]
Post-Project Totals	**17.98**	**12.35**	**20.68**	**18.34**	**86.96**	**23.25**	**77,700**

a) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.

These emissions are based on the following throughput rates and operation restrictions:

- Grain throughput: 324,000 MT/year
- Green malt (original grain) dried: 292,000 MT/year
- Pellet production: 5 MT/hr (daily average); 27,000 MT/year
- Sulfur burned in the Malthouse A (Kiln 1): 10 lb S/hr (daily average); 13.7 tons S/yr
- Sulfur burned in the new Kiln, Malthouse B (K2): none
- Natural gas usage in Malthouse boilers: 0.00625 MMcf/hr; 21.04 MMcf/year
- Natural gas usage in Malthouse A (Kiln 1) heat exchangers: 0.0775 MM cf/hr; 290 MMcf/year

- Natural gas usage in Malthouse B (new Malthouse Kiln 2) heat exchangers: 0.071 MM cf/hr; 420 MMcf/year
- Natural gas usage in new germination boilers: 0.008 MM cf/hr; 70.1 MMcf/year
- GWM will restrict the hourly and annual natural gas usage in the existing Malthouse boilers (BS1) and restrict the annual natural gas usage in the existing Malthouse kiln new heaters (KS1-KS5) and new kiln heaters (KB1-KB4).
- GWM will restrict emergency generator maintenance activates to no more than one hour per day and 100 hours per year.

Change in Potential to Emit

The change in facility-wide potential to emit is used to determine if a public comment period may be required and to determine the processing fee per IDAPA 58.01.01.225. The following table presents the facility-wide change in the potential to emit for criteria pollutants.

Table 4 CHANGES IN POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	VOC	CO_2e
	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr
Pre-Project Totals	8.5	5.2	20.53	14.55	17.33	9.40	31,320
Post-Project Totals	17.98	12.35	20.68	18.34	86.96	23.25	77,700
Changes in Potential to Emit	**9.48**	**7.15**	**0.15**	**3.79**	**69.63**	**13.85**	**46,380**

Non-Carcinogenic TAP Emissions

A summary of the estimated PTE for emissions increase of non-carcinogenic toxic air pollutants (TAP) is provided in the following table. Pre- and post-project, as well as the change in, non-carcinogenic TAP emissions are presented in the table.

Table 5 PRE- AND POST PROJECT POTENTIAL TO EMIT FOR NON-CARCINOGENIC TOXIC AIR POLLUTANTS

Non-Carcinogenic Toxic Air Pollutants	Pre-Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Post Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Change in 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Non-Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
Acrolein	0.00033	0.00046	0.00013	0.017	No
Ethyl Benzene	0.00115	0.00161	0.00046	29	No
Hexane	0.00077	0.00107	0.0003	12	No
Naphthalene	0.00004	0.00005	0.00001	3.33	No
Toluene	0.00445	0.0062	0.00175	25	No
Xylenes	0.0033	0.00461	0.00131	29	No
Chlorine	1.075	1.6125	0.538	0.2	Yes

Chlorine increment exceeds the 24-hour average non-carcinogenic screening level (EL) identified in IDAPA 58.01.01.585 as a result of this project. Therefore, modeling is required for chlorine.

Carcinogenic TAP Emissions

A summary of the estimated PTE for emissions increase of carcinogenic toxic air pollutants (TAP) is provided in the following table.

Table 6 PRE- AND POST PROJECT POTENTIAL TO EMIT FOR CARCINOGENIC TOXIC AIR POLLUTANTS

Carcinogenic Toxic Air Pollutants	Pre-Project Annual Average Emissions Rates for Units at the Facility (lb/hr)	Post Project Annual Average Emissions Rates for Units at the Facility (lb/hr)	Change in Annual Average Emissions Rates for Units at the Facility (lb/hr)	Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
Acetaldehyde	1.71E-04	4.23E-04	2.52E-04	3.00E-03	No
Benzene	3.16E-04	7.87E-04	4.71E-04	8.00E-04	No
Formaldehyde	6.72E-04	1.67E-03	1.00E-03	5.10E-04	Yes
PAH's (including naphthalene)	1.58E-05	3.93E-05	2.35E-05	9.10E-05	No

Formaldehyde increment exceeds the annual average non-carcinogenic screening level (EL) identified in IDAPA 58.01.01.586 as a result of this project. Therefore, modeling is required for formaldehyde.

Post Project HAP Emissions

The following table presents the post project potential to emit for HAP pollutants from all emissions units at the facility as submitted by the Applicant and verified by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 7 HAZARDOUS AIR POLLUTANTS EMISSIONS POTENTIAL TO EMIT SUMMARY

Hazardous Air Pollutants	PTE (T/yr)
Acetaldehyde	0.00185
Acrolein	0.00116
Benzene	0.00345
Ethyl Benzene	0.00409
Formaldehyde	0.00732
Hexane	0.00271
Naphthalene	0.00013
PAH's (including naphthalene)	0.00017
Toluene	0.01576
Xylenes	0.01171
Chlorine	2.63279 (7.11 T/yr [a])
Totals	**2.68**

[a] when operating 365 days/yr at the proposed daily rate.

Ambient Air Quality Impact Analyses

The applicant has demonstrated pre-construction compliance to DEQ's satisfaction that emissions from this facility will not cause or significantly contribute to a violation of any ambient air quality standard. The applicant has also demonstrated pre-construction compliance to DEQ's satisfaction that the emissions increase due to this permitting action will not exceed any acceptable ambient concentration (AAC) or acceptable ambient concentration for carcinogens (AACC) for TAP.

An ambient air quality impact analyses document has been crafted by DEQ based on a review of the modeling analysis submitted in the application. That document is part of the final permit package for this permitting action (see Appendix B).

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

The facility is located in Bannock County, which is designated as attainment or unclassifiable for $PM_{2.5}$, PM_{10}, SO_2, NO_2, CO, and Ozone. Refer to 40 CFR 81.313 for additional information.

Facility Classification

The AIRS/AFS facility classification codes are as follows:

For THAPs (Total Hazardous Air Pollutants) Only:

A = Use when any one HAP has actual or potential emissions $\geq$ 10 T/yr or if the aggregate of all HAPS (Total HAPs) has actual or potential emissions $\geq$ 25 T/yr.

SM80 = Use if a synthetic minor (potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable limitations) and the permit sets limits $\geq$ 8 T/yr of a single HAP or $\geq$ 20 T/yr of THAP.

SM = Use if a synthetic minor (potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable limitations) and the potential HAP emissions are limited to < 8 T/yr of a single HAP and/or < 20 T/yr of THAP.

B = Use when the potential to emit without permit restrictions is below the 10 and 25 T/yr major source threshold

UNK = Class is unknown

For All Other Pollutants:

A = Actual or potential emissions of a pollutant are $\geq$ 100 T/yr.

SM80 = Use if a synthetic minor for the applicable pollutant (potential emissions fall below 100 T/yr if and only if the source complies with federally enforceable limitations) and potential emissions of the pollutant are $\geq$ 80 T/yr.

SM = Use if a synthetic minor for the applicable pollutant (potential emissions fall below 100 T/yr if and only if the source complies with federally enforceable limitations) and potential emissions of the pollutant are < 80 T/yr.

B = Actual and potential emissions are < 100 T/yr without permit restrictions.

UNK = Class is unknown.

Table 8 REGULATED AIR POLLUTANT FACILITY CLASSIFICATION

Pollutant	Uncontrolled PTE[1] (T/yr)	Permitted PTE[2] (T/yr)	Major Source Thresholds (T/yr)	AIRS/AFS Classification
PM	>100	<80	**100**	SM
$PM_{10}/PM_{2.5}$	>100	<80	**100**	SM
SO_2	<100	<80	**100**	B
NO_X	>100	<80	**100**	SM
CO	>100	>80	**100**	SM80
VOC	<100	<80	**100**	B
HAP (single)	<10	<8	**10**	B
HAP (Total)	<25	<20	**25**	B

[1] Information taken from the classification form in the SOB for PTC No. P-060312 issued on October 4, 2006.
[2] Refer to Table 3 and Table 7 for exact values.

Permit to Construct (IDAPA 58.01.01.201)

IDAPA 58.01.01.201..... Permit to Construct Required

The permittee has requested that a PTC be issued to the facility for the plant expansion project. Therefore, a permit to construct is required to be issued in accordance with IDAPA 58.01.01.220. This permitting action was processed in accordance with the procedures of IDAPA 58.01.01.200-228.

Tier II Operating Permit (IDAPA 58.01.01.401)

IDAPA 58.01.01.401..... Tier II Operating Permit

The application was submitted for a permit to construct (refer to the Permit to Construct section), and an optional Tier II operating permit has not been requested. Therefore, the procedures of IDAPA 58.01.01.400–410 were not applicable to this permitting action.

Visible Emissions (IDAPA 58.01.01.625)

IDAPA 58.01.01.625 ..... Visible Emissions

The sources of PM emissions at this facility are subject to the State of Idaho visible emissions standard of 20% opacity. This requirement is assured by Permit Conditions 2.5, 2.6, 2.10, 2.11, 2.18, 2.20, 3.3 and 3.10.

Standards for New Sources (IDAPA 58.01.01.676)

IDAPA 58.01.01.676..... Standards for New Sources

The fuel burning equipment located at this facility is subject to a particulate matter limitation of 0.015 gr/dscf of effluent gas corrected to 3% oxygen by volume when combusting gaseous fuels. Fuel-Burning Equipment is defined as any furnace, boiler, apparatus, stack and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer. This requirement is assured by Permit Condition 2.6.

Particulate Matter – New Equipment Process Weight Limitations (IDAPA 58.01.01.701)

IDAPA 58.01.01.701..... Particulate Matter – New Equipment Process Weight Limitations

IDAPA 58.01.01.700 through 703 set PM emission limits for process equipment based on when the piece of equipment commenced operation and the piece of equipment's process weight (PW) in pounds per hour (lb/hr). IDAPA 58.01.01.701 and IDAPA 58.01.01.702 establish PM emission limits for equipment that commenced operation on or after October 1, 1979 and for equipment operating prior to October 1, 1979, respectively.

For equipment that commenced operation on or after October 1, 1979, the PM allowable emission rate (E) is based on one of the following four equations:

IDAPA 58.01.01.701.01.a: If PW is $< 9{,}250$ lb/hr; $E = 0.045\ (PW)^{0.60}$

IDAPA 58.01.01.701.01.b: If PW is $\geq 9{,}250$ lb/hr; $E = 1.10\ (PW)^{0.25}$

For equipment that commenced prior to October 1, 1979, the PM allowable emission rate is based on one of the following equations:

IDAPA 58.01.01.702.01.a: If PW is $< 17{,}000$ lb/hr; $E = 0.045\ (PW)^{0.60}$

IDAPA 58.01.01.702.01.b: If PW is $\geq 17{,}000$ lb/hr; $E = 1.12\ (PW)^{0.27}$

As presented in the EI in Appendix A, emissions rates of all emissions units are below their respective process weight rate limitations. Therefore, compliance with this requirement has been demonstrated.

Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70)

IDAPA 58.01.01.301..... Requirement to Obtain Tier I Operating Permit

Post project facility-wide emissions from this facility do not have a potential to emit greater than 100 tons per year for any criteria pollutants or 10 tons per year for any one HAP or 25 tons per year for all HAP combined as demonstrated previously in the Emissions Inventories Section of this analysis. Therefore, the facility is not a Tier I source in accordance with IDAPA 58.01.01.006 and the requirements of IDAPA 58.01.01.301 do not apply.

PSD Classification (40 CFR 52.21)

40 CFR 52.21 ..... Prevention of Significant Deterioration of Air Quality

The facility is not a major stationary source as defined in 40 CFR 52.21(b)(1), nor is it undergoing any physical change at a stationary source not otherwise qualifying under paragraph 40 CFR 52.21(b)(1) as a major stationary source, that would constitute a major stationary source by itself as defined in 40 CFR 52. Therefore in accordance with 40 CFR 52.21(a)(2), PSD requirements are not applicable to this permitting action. The facility is/is not a designated facility as defined in 40 CFR 52.21(b)(1)(i)(a), and does not have facility-wide emissions of any criteria pollutant that exceed 250 T/yr.

NSPS Applicability (40 CFR 60)

Non-applicability

40 CFR Part 60 Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

The facility is not subject to 40 CFR Part 60 Subpart Dc as explained in the following:

The six germination boilers (GVB1-GVB6) each have maximum heat input of 2 MM Btu/hr and do not meet the 10 MM Btu/hr applicability threshold.

The two makeup air heaters (MAU1-MAU2) each have maximum heat input of 2.19 MMBtu/hr and do not meet the 10 MM Btu/hr applicability threshold. Also, they do not meet the definition as steam generating units [40 CFR §60.41c].

The ten burners in the ten new kiln air-to-air heat exchangers (KS1-KS5) each have a maximum heat input of 7.9 MM Btu/hr and do not meet the 10 MM Btu/hr applicability threshold. Also, the heat exchangers do not meet the definition as steam generating units [40 CFR 60.41c].

The four kiln burners in the four air-to-air heat exchangers (KB1-KB4) each have a maximum heat input of 18.15 MM Btu/hr and exceed the 10 MM Btu/hr applicability threshold but are not steam generating units. See the steam generating unit definition in 40 CFR 60.41c.

There are no other combustion units included in the project that would be considered affected facilities under this regulation. NSPS Subpart Dc does not apply.

NSPS Part 60 Subpart IIII—Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

The diesel-fired emergency generator has not being modified or reconstructed since it was installed in 1980 and will not be modified or reconstructed as part of the expansion project; the effective date for engines to subject to this subpart is 7/11/2005; therefore, this NSPS does not apply.

NSPS Part 60 Subpart DD—Standards of Performance for Grain Elevators

The facility is not subject to this subpart. The following is taken from the SOB for PTC No. P-060312 issued October 4, 2006.

> The EPA delegated implementation and enforcement authority for Subpart DD to DEQ on May 22, 2006. In previous NSPS applicability determinations[4,5] for similar barley malting facilities, EPA determined that Subpart DD applies to parts of the operation handling unmalted barley, but does not apply to the malting process. In addition, these determinations clarified that barley that has undergone the chemical transformation to produce barley malt is no longer barley. Barley malt, therefore, does not meet the definition of a "grain," as regulated by this Subpart.
>
> Unlike the malting process, steam conditioning of the material collected from grain cleaning enhances the process of starch gelatinization, which improves digestibility of the barley feed pellets, but does not fundamentally change the material so that the feed pellets would no longer be considered a grain.

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[4] U.S. EPA Region X, Letter, Jeff KenKnight; Federal and Delegated Air Programs Unit; Office of Air, Waste, and Toxics; to Luis Miguel Alvarez, Grupo Modelo, S.A. de C'.V. (Gmodelo Agriculture, Inc.), Idaho Falls, Idaho; August 18, 2005.
[5] U.S. EPA Region V, Letter George Czerniak, Chief, Air Enforcement and Compliance Assurance Branch, to Kirby J. Kraft, Busch Agricultural Resources, Inc., St. Louis, Missouri, February 15, 1996.

> For facilities that commenced construction, modification, or reconstruction after August 3, 1978, the provisions of Subpart DD apply to each affected facility at any grain terminal elevator, which is defined in 40 CFR 60.301(c) as "any grain elevator which has a permanent storage capacity of more than 88,100 m^3 (ca. 2.5 million U.S. bushels)." The Great Western Malting facility was constructed in 1980. Subpart DD applicability was evaluated based on two sources of information:
>
> - Information provided in the December 5, 2005 application (Section 7: Solid Material Transport, Handling, and Storage forms) describes the storage capacity of the 15 barley silos as 2 million bushels, or about 70,480 m^3. Silo storage capacity for barley transfers before and after cleaning is given as 42,743 cubic feet, or about 1,210 m^3, and storage silo capacity for barley pellets is given as 6,826 bushels, or about 241 m^3. Based on this information, the total permanent barley storage capacity would be about 71,930 m^3.
> - Information received by DEQ on January 20, 2000 to address incomplete items on a December 9, 1999 application, states that "the overall storage capacity of the facility is approximately 1.7 million bushels, however only 50 percent (850,000 bushels) is dedicated to barley (grain) storage and this in a separate physical wing of the facility. The remaining capacity is for malt storage only in the other separate physical wing of the facility. The nature of the malting process and the contractual arrangements that GWM has with barley suppliers and malt customers require that the storage capacity be split in this manner. In fact, any change in current capacity would result in less barley storage and increased malt storage. Any future increase in storage capacity would maintain or decrease the ratio of barley to malt storage."
>
> Although the descriptions of the storage capacities are inconsistent, in neither case is the total permanent grain elevator storage capacity greater than the 88,100 m^3 (ca. 2.5 million bushels) NSPS threshold. The barley handling operations at this facility are therefore not subject to the provisions of Subpart DD.

The regulation analysis for this subpart in the application also indicates that the facility is not subject to this subpart.

NESHAP Applicability (40 CFR 61)

The facility is not subject to any NESHAP requirements in 40 CFR 61.

MACT Applicability (40 CFR 63)

40 CFR 63, Subpart ZZZZ—National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

The emergency generator engine is subject to this subpart. Detailed regulatory analysis can be found in Appendix E. EPA has delegated this subpart to DEQ.

Non-applicability

40 CFR 63 Subpart JJJJJJ—National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources

The Great Western Malting plant is an area source of HAP. The facility has two existing natural gas-fired hot water boilers and is adding six new natural gas-fired hot water boilers. They are not subject to this subpart and to any requirements in this subpart because they are gas-fired boiler as defined in this subpart in accordance with 40 CFR 63.11195.

Permit Conditions Review

This section describes only those permit conditions that have been added, revised, modified or deleted as a result of this permitting action.

PERMIT SCOPE

Permit Condition 1.1 states the purpose of this permitting action.

Permit Condition 1.2 states that those permit conditions that have been modified or revised by this permitting action are identified by the permit issue date citation located directly under the permit condition and on the right-hand margin.

Permit Condition 1.3 states that this PTC replaces Permit to Construct No. P-060312, issued on October 4, 2006.

Table 1.1 is revised to add new equipment and to add new information to the modified existing equipment.

MALT AND PELLET PRODUCTION

Permit Conditions 2.1 and 2.2

Permit Condition 2.1 and Permit Condition 2.2 briefly describe the process and emissions control. Detailed process description and emissions control can be found under Description section of this statement of basis.

Permit Condition 2.3

Permit Condition 2.3 is a grain loading standard that applies to natural gas-fired fuel burning equipment using indirect heat transfer at the facility.

Permit Condition 2.4

Permit Condition 2.4 includes the emissions limits that have total ambient impacts at or above 90% of their respective NAAQS (i.e., 92% of 24-hr PM_{10} NAAQS, 97% of 24-hr $PM_{2.5}$ NAAQS, 90% of annual $PM_{2.5}$ NAAQS, and 91% of 1-hr NOx NAAQS.) Permit Condition 2.4 also includes chlorine emissions limits as the chlorine ambient impact could exceed its acceptable ambient concentration (AAC) if the permit does not impose the emissions limits. With the limit, the impact is 77% of the AAC for chlorine. The emission rate as an emission limit is taken from the revised Section 5 of the application submitted on 12/28/2015. In addition, because chlorine is a HAP, an annual emission limit for cleaning germination beds is imposed. The annual limit is calculated using the daily emissions rate provided in the applicant's EI spreadsheet as: (12.9 lb/hr) x (2 hr/day) x (365 day/yr) / (2000 lb/T) = 4.7 T/yr. The limit for germination beds cleaning and the limit for germination vessels cleaning ensure that total chlorine emissions is less than the major source threshold for a single HAP.

Permit Condition 2.5

Permit Condition 2.5 is the 20% opacity limit applying to any stack, vent, or functionally equivalent opening associated with the processes.

Permit Condition 2.6

Permit Condition 2.6 specifies that all combustion sources listed under Permit Condition 2.3 will burn natural gas exclusively.

Permit Condition 2.7

Permit Condition 2.7 establishes the throughput limits that were used in the emissions calculation; the calculated emissions rates were used in the dispersion model to demonstrate compliance with the NAAQS. PC 2.7 is a revised permit condition of old PC2.5. It reflects the throughput increase as a result of this plant expansion project.

The throughput of feed barley (the "thin" barley) is not limited as it is somewhat inherently limited by the barley throughputs.

The throughputs of steep tanks fill conveyors 1 and 2 are not limited as the emissions calculations are based on 160 MT/hr each or 320 MT/hr total that is great than 300 MT/hr total of barley throughput limit.

The throughputs of Malthouse B (kiln 2) new malt leg conveyor, malt analysis bins fill or reclaim, kiln byproduct cyclone, new malt conveyor 2, malt storage bins 1-5 fill conveyor 1, and malt storage bins 6-10 fill conveyor 2 are not limited as they are inherently limited by the throughput limits of the green malt (original grain) dried in the kilns. In addition, the emissions from these sources are controlled by the dust filters and are relatively low.

Permit Condition 2.8

Permit Condition 2.8 establishes the operation requirement for cleaning the new germination vessels.

Permit Condition 2.9

Permit Condition 2.9 establishes combustion sources fuel usage limits and operating requirements that were used in the emissions calculations and consequently, the calculated emissions were used in the dispersion model to demonstrate compliance with the NAAQS.

Short-term emissions limit and the short-term fuel usage limit for the malt house boilers are proposed and imposed in the permit becasue the short-term ambient impacts are close to NAAQS for NOx and $PM_{2.5}$.

The applicant requested the annual natural gas usage limits for the 10 burners of Malthouse A (Kiln 1) and the four burners of Malthouse B (Kiln 2). The limits keep CO PTE less than major source threshold of 100 T/yr.

Operating requirements of Germination Vessel Boilers 1, 2, and 3 and Germination Vessel Boilers 4, 5, and 6 are included in the permit because they are used in the emissions estimation. However, no fuel usage limits are imposed for Germination Vessel Boilers 1 – 6 as the calculated and modeled emissions were based on the boilers' design capacities and annual operating hours of 8,760 hr/yr.

Permit Condition 2.10

Permit Condition 2.10 specifies the control and control levels for the processes listed in PC 2.10. The control and control levels were used in the EI calculations.

Permit Condition 2.11

Permit Condition 2.11 is the modified old PC 2.10.

Permit Condition 2.11.1 uses standard language taken from DEQ internal guidance (2008AAF202.) It applies to the existing baghouses and the new dust filters. The weekly see-no-see frequency is recommended in the guidance. The daily pressure drop monitoring requirements for the existing baghouses in old PC 2.9.1 is removed by following the internal guidance.

Permit Condition 2.11.2 is taken from old PCs 2.10.2 and old PC 2.9.2. Permit Condition 2.11.3 is taken from old PC 2.10.3. Permit Condition 2.11.4 is taken from old PC 2.10.4 that also applies to the new Malthouse B (Kiln 2).

Permit Condition 2.12

Permit Condition 2.12 is the old PC 2.11.

Permit Condition 2.13

Permit condition 2.13 is the modified old PC 2.12. It is the throughput monitoring requirements to demonstrate compliance with the throughput limits in PC 2.7. Permit Condition 2.13.5 is added to monitor the new Malthouse Kiln 2 (Malthouse B) throughput.

Old PC 2.12.6 is removed as baghouse pressure drop monitoring is not required according to DEQ's internal guidance (2008AAF202.) Since old PC 2.12.7 is now included in PC 2.11.1, it is removed from this permit condition.

New permit condition 2.13.7 specifies how to demonstrate compliance with the PM_{10} and $PM_{2.5}$ emissions limits for Malthouse Kilns in Appendix A when the emissions factors from DEQ-approved source test required in PC 2.21 are available.

Permit Condition 2.14

Permit Condition 2.14 specifies the monitoring requirements to demonstrate compliance with the chlorine emissions limits in Permit Condition 2.4.

Permit Condition 2.15

Permit Condition 2.15 specifies the monitoring requirements to demonstrate compliance with the operating requirements and fuel usage limits in Permit Condition 2.9.

Permit Condition 2.16

Permit Condition 2.16 specifies the record keeping requirements for the baghouses and dust filters to demonstrate compliance with the control efficiency requirements in Permit Condition 2.10.

Permit Condition 2.17

Permit Condition 2.17 requires the permittee to keep the records to show that the NOx emissions from Malthouse kiln burners are 30 ppm or less @ 3% O_2 and that the NOx emissions from germination vessel boilers are 20 ppm or less @ 3% O_2 to demonstrate compliance with the NOx emissions limits in Appendix A of the permit.

Permit Condition 2.18

Permit Condition 2.18 is the revised old PC 2.13. "Except for the weekly monitoring frequency specified in Permit Condition 2.11.1 for dust filters/baghouse system" is added to the revised permit condition.

Permit Conditions 2.19 and 2.20

Permit Conditions 2.19 and 2.20 are old Permit Conditions 2.14 and 2.15 without changes.

Permit Condition 2.21

In the application, the $PM_{10}/PM_{2.5}$ emissions were calculated using the emissions factors developed based on a 2005, non-DEQ approved, filterable PM source test and the PM/PM_{10} and $PM/PM_{2.5}$ ratios taken from AP-42 Table 9.9.1–2. The adjusted $PM_{2.5}$ EF of 0.0490 lb/ton and PM_{10} EF of 0.0775 lb/ton used in the applicant appear low comparing to 0.075 + 0.075 = 0.15 lb/ton from AP-42.

In addition, DEQ modeler has performed a sensitivity assessment for modeled impacts of $PM_{2.5}$ with the GWM modeling files, and it looks like the maximum $PM_{2.5}$ impacts are from a combination of sources and not just one source group. However, the largest (or one of the largest) contributions are the KSE (Malthouse A, K1) sources, which contribute about 1/3 of the highest impacts, or about 7 $\mu g/m^3$ of the maximum of 22 $\mu g/m^3$. Malthouse B (Kiln 2) has a maximum impact of about 3 $\mu g/m^3$.

Because the facility's $PM_{2.5}$ ambient impact is 97.4% of the 24-hr $PM_{2.5}$ NAAQS, source testing of Malthouse B (Kiln 2) is required to verify the emissions factors used in the emissions calculations and consequently to assure the compliance with the $PM_{10}/PM_{2.5}$ NAAQS. Permit Condition 2.21 is developed using the DEQ's internal guidance for source test permit conditions (2008AAF202).

Permit Condition 2.22

Permit condition 2.22 is a source testing reporting requirement.

EMERGENCY GENERATOR

Permit Condition 3.1

Permit Condition 3.1 refers Table 1.1 for the information on the emergency generator, its control, and its emissions point.

Permit Condition 3.2

Permit Condition 3.2 states that emissions from the emergency generator are uncontrolled.

Permit Condition 3.3

This is a standard opacity limit.

Permit Condition 3.4

To demonstrate compliance with 24-hr NAAQS for $PM_{2.5}$ and 1-hr NAAQS for NOx, the applicant has proposed an operating limit that the operation of the emergency generator for maintenance activities will not exceed one hour per day. This is specified in PC 3.4.

The emergency generator engine is subject to 40 CFR 63, Subpart ZZZZ, it is limited to 100 hr/yr for non-emergency operation. The applicant has used this limit, 100 hr/yr, in the annual emissions calculation and consequently, models the calculated emissions rate to demonstrate compliance with the NAAQS. The operating, monitoring, and record keeping requirements are covered under 40 CFR 63, Subpart ZZZZ.

Permit Condition 3.5

Permit Condition 3.5 specifies monitoring and record keeping requirements for demonstrating compliance with the one hour per day operating limit for the emergency generator.

Permit Condition 3.6

Permit Condition 3.6 states should there be a discrepancy between permit conditions and the federal regulations, the federal regulations govern.

Permit Conditions 3.7 to 3.14

Permit Conditions 3.7 to 3.14 includes requirements taken from 40 CFR 63 Subpart ZZZZ that apply to the emergency generator. Detailed analysis can be found in Appendix E of the SOB.

GENERAL PROVIISONS

This section includes the general provisions taken from the current PTC template.

APPENDIX A

Appendix A includes the emissions limits.

PUBLIC REVIEW

Public Comment Opportunity

An opportunity for public comment period on the application was provided in accordance with IDAPA 58.01.01.209.01.c. During this time, there was a request for a public comment period on DEQ's proposed action. Refer to the chronology for public comment opportunity dates.

Public Comment Period

A public comment period will be made available to the public in accordance with IDAPA 58.01.01.209.01.c.

APPENDIX A – EMISSIONS INVENTORIES

APPENDIX B – AMBIENT AIR QUALITY IMPACT ANALYSES

APPENDIX C – FACILITY DRAFT COMMENTS

The following comments were received from the facility on March 25, 2016:

Facility Comment: In developing the final design for the Pocatello plant, GWM has adopted a different naming convention for the malthouses. The existing malthouse kiln 1 will be called Malthouse A and the new malthouse kiln 2 will be called Malthouse B. We would like the air permit to reflect these names to make the permit consistent with the terminology that will be used at the plant.

DEQ Response: Changes are made in the permit and the statement of basis.

Facility Comment: The ANOX heaters that will be replacing the existing burners in Malthouse A (kiln 1) are defined in Section 2, Table 1.1 of the draft permit, however, the permit does not mention that the existing burners will continue to operate until the new heaters are installed. Should a statement about operation of the existing burners be added to the permit?.

DEQ Response: GWM was not able to demonstrate compliance with 1-hr NOx NAAQS if Malthouse B is operating and Malthouse A is operating using the old burners. To reflect what GWM has proposed (refer to Application Scope section in regard to two phases construction approach), Permit Condition 2.9.5 is add and read as follows:

"2.9.5 When Malthouse B begins production, the permittee shall use the new natural gas-fired low NOx burners for Malthouse A, shall not use the old ten natural gas-fired Kiln 1 burners for Malthouse A, and the old ten natural gas-fired Kiln 1 burners shall be inoperative."

Facility Comment: The regulatory ambient threshold for chlorine impacts is based on 24-hour exposure. The modeling in the application used the daily emissions from cleaning the germination vessels. The chlorine emissions used in the modeling totaled 12.9 lb/day. This emission rate showed compliance with the impact threshold.

GWM does not use just one or two products for cleaning. For example, they can use varying solutions of liquid sodium hypochlorite (1.5% to 12%), calcium hypochlorite or other products. As a result, the proposed limits on product usage in the draft permit (Condition 2.8) will not work for the plant. We suggest doing a chlorine emission calculation based on the actual products used as an alternative condition.

DEQ Response: changes have been made to Permit Conditions 2.8 and 2.14 and Appendix A of the permit. New discussions are added to Permit Condition Review section under Permit Condition 2.4 in the statement of basis.

Facility Comment: The application for the project described the malt cleaning equipment as a scalper and an aspirator. The emissions from the malt cleaning equipment are vented to two baghouses (BH2 and BH3). The emissions were calculated using the total throughput quantity of malt from both Malthouse A and Malthouse B. In the final design of the expansion it was decided that another aspirator will be added to the project with Malthouse A malt going through one aspirator and Malthouse B malt going through the second aspirator. Emissions from the aspirators still will go to BH 2 and BH3. There will be no emission change resulting from the use of two aspirators versus a single aspirator. The change from one to two aspirators should be reflected in the equipment descriptions in Section 2, Table 1.1 of the permit.

DEQ Response: The change has been made to Table 1.1 of the permit and to Table 1 of the SOB.

Facility Comment: Six boilers will be used to supply hot water to the four germination vessels. The application included information on boilers manufactured by Thermal Solutions. Using the latest information from the design, the germination vessel boilers will be manufactured by Cleaver Brooks instead. The Cleaver Brooks boilers will be the same size, use the same fuel and have the same emission characteristics as the Thermal Solutions boilers. The germination vessel boiler equipment information in Section 2, Table 1.1 of the permit has been modified to include the Cleaver Brooks boiler information.

DEQ Response: The changes have been made to Table 1.1 of the permit and to Table 1 of the SOB.

Facility Comment: Grain and other materials used in the plant are measured and records are kept in metric tons. Several of the permit conditions contain limits in units of metric tons and in short tons. It would be confusing to have the limits expressed in both units, so we request that the short ton limits be removed from Condition 2.7 and only the metric ton limits remain in the permit.

DEQ Response: The changes have be made to the permit.

Facility Comment: The proposed permit includes a limit on grain throughput in the malthouses. The term that best describes the quantity of grain that is fed into the malting process is 'original grain'. GWM proposes that the term 'green malt' be removed from the permit and replaced with 'original grain'. The plant keeps track of original grain quantities and will be able to show compliance with the production limits.

DEQ Response: The changes have be made to the permit.

APPENDIX D – PROCESSING FEE

Emissions Inventory	
Pollutant	Annual Emissions Change (T/yr)
NO_X	2.6
SO_2	0.0
CO	25.6
PM_{10}	2.6
VOC	3.4
TAPS/HAPS	2.7
Total:	**37.0**
Fee Due	**$ 5,000.00**

APPENDIX E – FEDERAL REGULATION ANALYSIS

40 CFR 63 Subpart ZZZZ from App.